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# Analyzing Market Cycles with Persistent Homology

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## **Abstract**

The abstract paragraph should be indented 1/2 inch (3 picas) on both left and right-hand margins. Use 10 point type, with a vertical spacing of 11 points. The word **Abstract** must be centered, bold, and in point size 12. Two line spaces precede the abstract. The abstract must be limited to one paragraph.

## **1 Final papers for STA613/CBB540, 2013**

Please read carefully the instructions below, and follow them faithfully.

### **1.1 Style**

Papers describing final project should be up to four pages long (not including bibliography). They should contain an abstract, introduction, related work, methods, results, discussion, and conclusion section, and figures and tables where necessary, and a bibliography. These papers are due on April 16th in class.

### **1.2 Retrieval of style files**

The formatting instructions contained in these style files are summarized in sections 2, 3, and 4 below.

## **2 General formatting instructions**

The text must be confined within a rectangle 5.5 inches (33 picas) wide and 9 inches (54 picas) long. The left margin is 1.5 inch (9 picas). Use 10 point type with a vertical spacing of 11 points. Times New Roman is the preferred typeface throughout. Paragraphs are separated by 1/2 line space, with no indentation.

Paper title is 17 point, initial caps/lower case, bold, centered between 2 horizontal rules. Top rule is 4 points thick and bottom rule is 1 point thick. Allow 1/4 inch space above and below title to rules. All pages should start at 1 inch (6 picas) from the top of the page.

### **3 Headings: first level**

First level headings are lower case (except for first word and proper nouns), flush left, bold and in point size 12. One line space before the first level heading and 1/2 line space after the first level heading.

#### **3.1 Headings: second level**

Second level headings are lower case (except for first word and proper nouns), flush left, bold and in point size 10. One line space before the second level heading and 1/2 line space after the second level heading.

##### **3.1.1 Headings: third level**

Third level headings are lower case (except for first word and proper nouns), flush left, bold and in point size 10. One line space before the third level heading and 1/2 line space after the third level heading.

### **4 Citations, figures, tables, references**

These instructions apply to everyone, regardless of the formatter being used.

#### **4.1 Citations within the text**

Citations within the text should be numbered consecutively. The corresponding number is to appear enclosed in square brackets, such as [1] or [2]-[5]. The corresponding references are to be listed in the same order at the end of the paper, in the **References** section. (Note: the standard L<sup>A</sup>T<sub>E</sub>X style `unsrt` produces this.) As to the format of the references themselves, any style is acceptable as long as it is used consistently.

#### **4.2 Figures**

All artwork must be neat, clean, and legible. Lines should be dark enough for purposes of reproduction; art work should not be hand-drawn. The figure number and caption always appear after the figure. Place one line space before the figure caption, and one line space after the figure. The figure caption is lower case (except for first word and proper nouns); figures are numbered consecutively.

Make sure the figure caption does not get separated from the figure. Leave sufficient space to avoid splitting the figure and figure caption.

#### **4.3 Tables**

All tables must be centered, neat, clean and legible. Do not use hand-drawn tables. The table number and title always appear before the table. See Table 1.

Place one line space before the table title, one line space after the table title, and one line space after the table. The table title must be lower case (except for first word and proper nouns); tables are numbered consecutively.

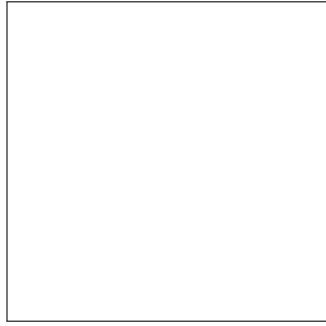


Figure 1: Sample figure caption.

Table 1: Sample table title

<b>PART</b>	<b>DESCRIPTION</b>
Dendrite	Input terminal
Axon	Output terminal
Soma	Cell body (contains cell nucleus)

## 5 Final instructions

Do not change any aspects of the formatting parameters in the style files. In particular, do not modify the width or length of the rectangle the text should fit into, and do not change font sizes. Please note that pages should be numbered.

## 6 Preparing PostScript or PDF files

Please prepare PostScript or PDF files with paper size “US Letter”, and not, for example, “A4”. The `-t letter` option on `dvips` will produce US Letter files.

- Consider directly generating PDF files using `pdflatex`
- Otherwise, please generate your PostScript and PDF files with the following commands:

```
dvips mypaper.dvi -t letter -Ppdf -G0 -o mypaper.ps
ps2pdf mypaper.ps mypaper.pdf
```

### Acknowledgments

Use unnumbered third level headings for the acknowledgments. All acknowledgments go at the end of the paper.

### References

References follow the acknowledgments. Use unnumbered third level heading for the references. Any choice of citation style is acceptable as long as you are consistent. CITE A LOT. Any unreferenced methods, prior work, or biological phenomenon, unless it is textbook-common, will be penalized.

- [1] Alexander, J.A. & Mozer, M.C. (1995) Template-based algorithms for connectionist rule extraction. In G. Tesauero, D. S. Touretzky and T.K. Leen (eds.), *Advances in Neural Information Processing Systems 7*, pp. 609-616. Cambridge, MA: MIT Press.
- [2] Bower, J.M. & Beeman, D. (1995) *The Book of GENESIS: Exploring Realistic Neural Models with the GEneral NEural Simulation System*. New York: TELOS/Springer-Verlag.
- [3] Hasselmo, M.E., Schnell, E. & Barkai, E. (1995) Dynamics of learning and recall at excitatory recurrent synapses and cholinergic modulation in rat hippocampal region CA3. *Journal of Neuroscience* **15**(7):5249-5262.